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Growth Of Indian Pharmaceutical Firms: An Empirical Analysis

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Abstract

Indian pharmaceutical sector is currently in a strategically prominent position in the global pharma market. The global pandemic of COVID-19 has reaffirmed the importance of the production and exports of drugs and vaccines needed from Indian pharma industry. Despite this increased demand, industry faces several challenges in maintaining a steady growth. This paper tries to analyse the determinants of growth of the industry in light of this scenario. The data for the empirical analysis was obtained from the Prowess database provided by the CMIE. The annual firm-level data of 321 listed drugs and pharmaceutical companies from the time-period of 1999 to 2019 is used for the final analysis. The study adopts the two-step GMM estimation technique for the dynamic panel data analysis. The initial results show that lagged growth, firm size, age, and R&D intensity are significant factors determining the growth of the industry.

Key words: Indian pharmaceutical industry, firm growth, dynamic panel data, system gmm

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Extended Abstract

1. Introduction

The global pharmaceutical industry has been impacted in an unprecedented way because of the pandemic and is poised to grow with a strategic emphasis on healthcare by governments across the world. India is in a unique position to play in the growth of this industry, as it is not only a vast market for pharmaceutical products, being home to the majority of a young population; but also, a major production centre of pharmaceutical products as well. Today, India is considered as a prominent global player occupying 3rd position in terms of volume of production and 14th in terms of the value of production[1]. The main drivers of this upward trend of sales were increased global and domestic demand for Indian generic drugs, bulk drugs, vaccines, and formulations

However, in recent years, the industry has been facing several challenges. Despite the phenomenal growth of demand for Indian pharma products in the past decade, the Indian pharmaceutical industry has not been able to leverage its manufacturing capabilities at the most critical period of the pandemic. The volatility in growth raises important questions regarding the sustainability and determinants of growth of the Indian pharmaceutical industry. This paper tries to analyse the determinants of growth of the industry in light of this scenario.

2. Literature review

The growth dynamics of pharmaceutical sectors do not comply entirely with the established stylized facts of firm growth, though some features exist commonly. There is a wide array of studies that explores the relation between firm growth and size in the industrial organization literature in several sectors and countries. Gibrat's law dealing with the size–growth relationship postulates that firm size does not bear any impact on the growth of the firms. Further research on this relationship has produced both supporting and contradicting evidence. (Bottazzi & Secchi, 2005) found no relation between firm size and growth among the Western pharmaceutical firms. On the contrary, (Farinas & Moreno, 2000) found strong positive relation between firm size and growth while (Amirkhalkhali & Mukhopadhyay, 1993) observed that

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[1] https://assets.ey.com/content/dam/ey-sites/ey-com/en_in/topics/health/2021/ey-ficci-indian-pharma-report-2021.pdf?download; Indian Pharmaceutical Industry 2021: future is now: FICCI, EY, 2021.

smaller firms were growing faster than the larger ones. The relation between the age of the firm and growth rate is also widely explored, yet with contradicting results. On the one hand, literature suggests that older firms performs better than younger firms due to more experience – learning by doing (Coad , et al, 2013) (Shanmugam & Bhaduri, 2010). But there are studies showcasing that older firms are less flexible thereby showcasing a negative relation between two (Barron et al, 1994).

The post-liberalization policies and industrial delicencing have caused a steady growth in the exports post-2000. Exports are the indication of increased global competitiveness. With India able to produce quality drugs with cheap labour, the firms are increasingly exporting generic drugs and vaccines. When there are increased exports, it indicates more global competitiveness, higher efficiency, lower production costs, and higher profitability (Chittor, et al., 2008) (Mishra & Vikas, 2010). Imports are expected to harm the growth rate of the firms. India is depending on the imports of Active Pharmaceutical Ingredients to meet 60% of its domestic demands (IBEF Report, 2019). Due to the patent regime, drug price control, and pharmaceutical policies, the companies do not have the incentive to produce and distribute drugs at low prices in the domestic market. This has ultimately resulted in India importing its Active pharmaceutical Products from China to save the input production cost. The presence of import quota and import licensing can be detrimental to the growth of the firms and resulting in a negative relation with the firm growth (Chaudhuri & Das, 2006).

The various theoretical and empirical literature on firm performance has established a strong positive relationship between research and development efforts with the growth and efficiency of pharmaceutical firms. The increased R&D expenditure is an indication of more investments done for increased innovations and efficient production (Bhandari, 2010). This can eventually lead to decreased cost of production. R&D usually is expected to increase profitability in the long run. Literature on R&D efforts having no impact on the firm growth is also present (Mishra & Vikas, 2010). Since the implementation of the Products Amendment Act (2005) in line with TRIPS compliance, firms are more incentivized to invest in R&D to produce more final products and to export them(EXIM report). Pharmaceutical firms in India invest heavily in R&D owing to the large demand for Indian drugs in the global and domestic markets.

The financial capabilities of a firm to drive its growth can be analyzed through financial measures such as profitability and leverage. Literature of financial leverage gives varied results on the nature of relation between firm growth and external source of financing. (Huynh &

Petrunia, 2010) had found a positive relation among the growth and leverage of Canadian manufacturing firms, while studies have also found that leverage could adversely affect firm growth (Fosu, et al,. 2016).

The firm dynamics and growth patterns of pharmaceutical firms have been analyzed in great detail in many developed countries. Existing studies in the Indian context are not as rich and have rarely addressed the econometric problems involved in the dynamic panel data estimation. The current global crisis due to the covid pandemic adds new dimensions to the necessity of further growth of the Indian pharmaceutical sector for meeting global and domestic vaccine demands. Thereby, a detailed investigation of the current growth parameters of the Indian pharmaceutical industry is essential for understanding how to sustain the growth of the industry.

3. Data and methodology

The sample for the study is taken from Prowess database provided by Centre for Monitoring Indian Economy (CMIE). The study has taken the data of 321 firms in Indian pharmaceutical sector from the period of 1999 to 2019 which includes the product categories such as: vaccines, formulations, drugs, pharmaceutical products, homeo & ayurvedic products.

The dynamic panel data modeling faces the problem of endogeneity of lagged dependent variable(firm growth) and other regressors. (Arellano & Bond, 1991) and (Blundell & Bond, 1998) developed GMM estimators which solves the problem of endogeneity and unobservable heterogeneity by creating internal instruments. Various robustness tests are also done to check for the validity and reliability of the instruments used in the model.

4. Results

Initial results have indicated lagged growth to be positively significant which signifies persistence in the growth of the firms. Export and import intensity were found to be positively impacting the firm growth, but were found to be having insignificant relation. R&D intensity is having a positive relation with firm growth which was one of the intended objectives of pharmaceutical policies of GOI. Moreover, pharmaceutical sector is one of the few industries in India which invests significantly in R&D. Younger and smaller firms are found to be growing faster in the Indian pharma sector.

5. Conclusion and Discussion

Indian pharmaceutical sector is now at an advantageous position globally with the increased demand for Indian pharma products. Hence, a deeper analysis of the firm dynamics by exploring the factors like firm size, age, R&D, import, export, profitability, and leverage can provide valuable insights on the industry. Most importantly, identifying the pattern of growth of different sized firms can contribute to a better understanding of the structure of the Indian pharma sector.

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